

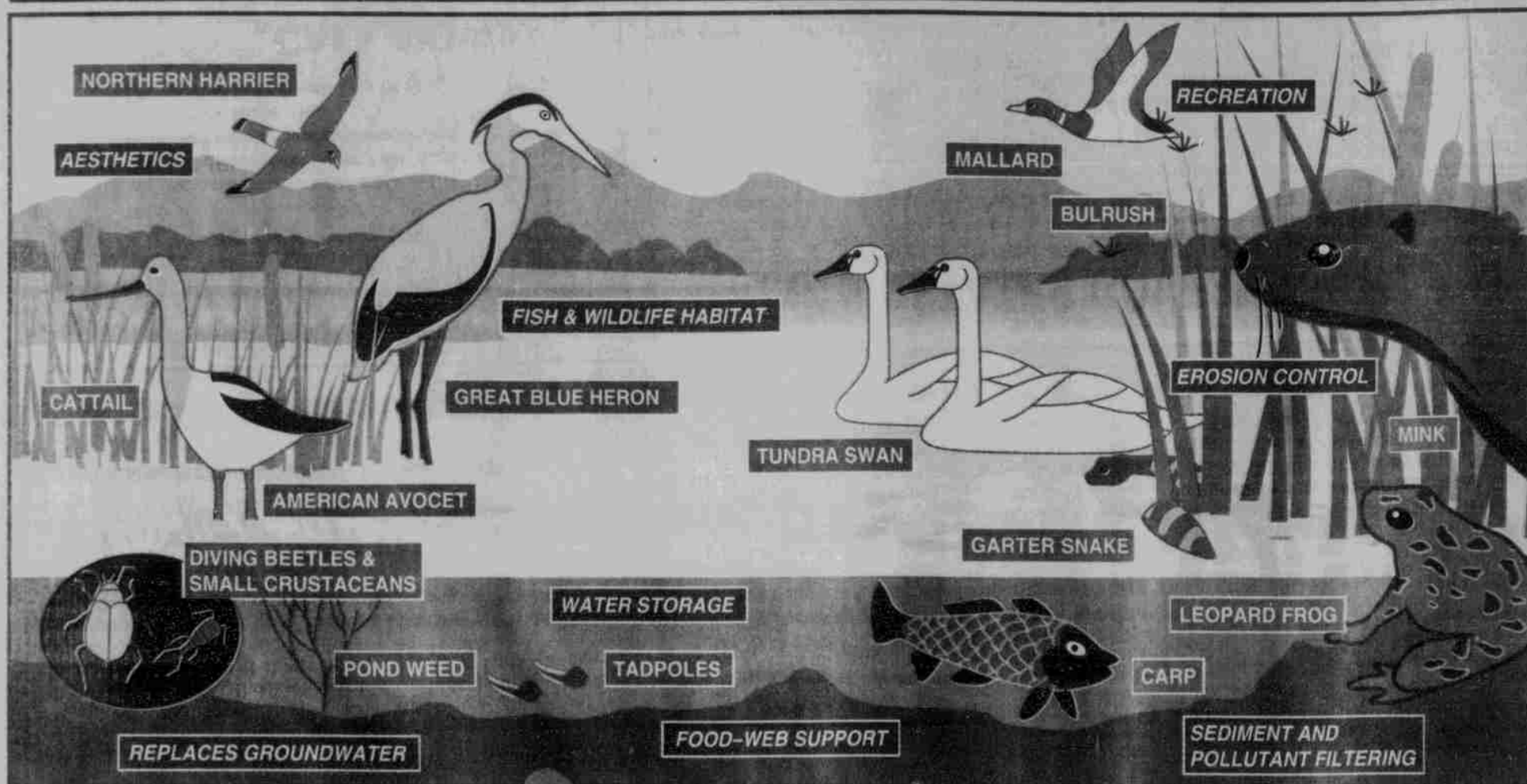
The Salt Lake Tribune RECREATION

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D8

HOW A WETLAND WORKS: A GREAT SALT LAKE FRESHWATER MARSH



A YEAR WITH THE

Great Salt Lake

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SAME AS MARCH

WETLANDS

Marshes benefit society

By Tom Wharton
THE SALT LAKE TRIBUNE

While exploring the Great Salt Lake in 1849, Capt. Howard Stansbury was confronted with rotting brine flies and distinct marsh odors.

"The lake," he later wrote, "was impregnated with all the villainous smells which nature's laboratory was capable of producing."

Through the years, Wasatch Front residents have avoided the Great Salt Lake because they could not stand its distinctive smell.

To all but a few duck hunters, birders and ecologists, Great Salt Lake's marshes still remain alien territory. Yet the salt marshes, freshwater wetlands, wet meadows, mud flats, ponds, bogs and springs that surround the lake provide society with many benefits.

These wetlands store seasonal floodwaters. They purify polluted runoff. They provide a place to hunt. They offer wild places for the enjoyment of nature. Wetlands in Great Salt Lake tributaries such as the Jordan River stabilize stream banks.

But, through the years, those who visited the marshes recognized their value. Hunters set aside private duck clubs at the turn of the century. The Public Shooting Grounds in Box Elder County, one of the first hunting areas open to everyone in the United States, opened in 1923. Congress created the Bear River Migratory Bird Refuge in 1928. The Nature Conservancy purchased the Layton-Kaysville Marsh in 1984. This was its first Utah project.

These wetlands form a complex food web that serves millions of migrating Western Hemisphere birds.

Brine shrimp and two kinds of brine flies feed on blue-green algae in the lake. Many shorebirds and waterfowl in turn eat the shrimp and flies. Other larger birds, like pelicans, consume carp in the freshwater marshes. Birds of prey swoop down to eat ducks, mice and voles. Larger mammals such as fox, coyote, mink and skunks search for the same prey on the ground. Humans consume ducks, geese and swans.

The Fremont Indians, some of northern Utah's first human inhabitants, relied on the edible parts of the cattail. They ate pollen, young shoots and starchy underground stems.

"Much has been made of the tragic loss of rain forests in our hemisphere of late," says Charles Potter, executive director of the North American Wildlife Foundation. "But, in fact, because of their productivity of plant and animal matter rich in fats and proteins, freshwater marshes are the most productive ecosystems on Earth."

Adds John Kadlec of Utah State University: "Utah's image seems to be one of mountains and deserts, with neither the amount nor value of its marshes widely appreciated. Because it is largely arid, the value of the wetlands is greater by contrast and by lack of alternatives."

Tom Aldrich, the chief waterfowl biologist for the Division of Wildlife Resources, says 400,000 of Utah's 560,000 acres of wetlands are found in the Great Salt Lake system. The federal Bear River

WETLANDS OF THE GREAT SALT LAKE



Bird Refuge includes 65,000 acres of marshland. State wildlife refuges make up another 65,000 acres. About 50,000 acres are parts of private duck-hunting clubs.

These marshes face numerous threats. When the Great Salt Lake is high, as it was in the mid-1980s, they can be wiped out by the infusion of saltwater. During drought years, wetlands on many managed marshes disappear because of a lack of water. Dam development, especially that proposed on the Bear River, could seriously impact the Bear River Bird Refuge. Poor water quality can cause thousands of ducks to die of botulism problems. Proposals for recreational development on both Utah and Great Salt Lake threaten to dry up wetlands.

"Anything that happens on the Great Salt Lake has an impact on the entire system," says Aldrich.

And, indeed, the Great Salt Lake is dynamic, says Catherine Quinn, a wetlands specialist for the Division of Wildlife Resources. "The lake will rise and fall. The marshes along the Great Salt Lake provide a buffer where the lake can grow."

Wetlands found on Great Salt Lake tributaries like the Jordan, Bear and Weber serve urban residents in several ways. They filter out pollutants coming from storm drains. They help to recharge groundwater systems. And, if preserved,

they serve as valuable flood retention basins.

"It is like pulling teeth to save these wetlands," said Salt Lake County environmental health specialist Steve Jensen. "Developers don't have an appreciation for their value. The first thing a property owner is concerned about is that when we don't allow him to develop a wetland, we are restricting the use of his property."

The Central Utah Reauthorization Bill being debated in the U.S. Congress could help solve that dilemma, Jensen says, because it would give government \$7 million to purchase and develop Jordan River wetlands.

Westminster College botany Professor Ty Harrison worries that, where the Great Salt Lake is concerned, too much emphasis is placed on the deeper freshwater marshes created by dikes. These management areas are designed to produce — and hold — ducks and geese.

Though the freshwater areas are important, Harrison finds the unique aspects of the lake's salt marshes more interesting.

Salt-tolerant plants like greasewood, pickleweed, iodine bush, inkweed and salt grass are found only in systems like the Great Salt Lake. They have evolved to live in an environment where the fluctuations of the lake coupled with frequent "flushing" actions by fresh water combine to create a unique ecology.

THE WETLANDS FOOD WEB

CATTAILS AND BULRUSHES are important sources of energy and mineral nutrients in the marsh food web. Muskrats and many insects live on them. Water fowl eat the seeds.

ALGAE and small pieces of organic plant matter are eaten by a variety of microscopic animals, small crustaceans, tadpoles and insects.

SMALL CRUSTACEANS AND INSECTS are eaten by tadpoles and a variety of fish. Many water birds feed on insects. Mallards eat mosquito and midge larvae, which feed on microscopic animals. Frogs eat insects. Carp live on the small plant and animal life and the dead organic matter found at the bottom of the marsh.

AVOCETS and other marsh birds eat insects and small crustaceans as well as insect larvae.

TUNDRA SWAN feed on the Sego pond weed and tuberous plants while visiting the Great Salt Lake marshes.

GARTER SNAKES eat frogs and tadpoles. Small fish are also a part of their diet.

MUSKRATS are one of the few larger animals that feed primarily on the plant life of the marsh.

GREAT BLUE HERONS, EGRETS, CORMORANTS AND MERGANSERS are among the larger predators of fish. Herons will also eat snakes and frogs.

NORTHERN HARRIERS AND SHORT EARED-OWLS prey on small ducks, frogs, voles and mice.

PEREGRINE FALCONS eat shore birds, blackbirds of various kinds and small ducks.

MINKS, SKUNKS, RACOONS, RED FOXES AND WEASLES eat mainly small birds, frogs, mice, voles and snakes. Minks will take muskrat. Red foxes eat ducks. All of these mammals supplement their diet with insects and some vegetation.

BALD EAGLES eat the larger water fowl, including geese and herons when the marsh is frozen. During thaws, they eat mostly large carp.

HUMANS eat a variety of ducks. Some cultures value the carp as a delicacy. Fremont Indians ate cattails extensively as well as various water fowl.

Mark Knudsen / The Salt Lake Tribune

Using a small magnifying glass, Harrison examines salt crystals on a piece of salt grass found on a dune near Antelope Island. The plant copes with high salinity levels in the soil by excreting the salt out on its leaves.

Harrison also visits the Layton-Kaysville Marsh with many of his college students. He has the undergraduates taste the salty — but not unpleasant — inkweed and pickleweed. These plants provide food for millions of shorebirds and ducks that visit the Great Salt Lake system each year.

In a salt marsh, the professor gets on his hands and knees to part the grass. As spiders and other insects scurry in all directions, he reveals the tunnel of a vole. Voles use these tunnels to hide from hawks, owls and mammals that might eat them, and as a place to collect plants and seeds to eat.

In the distance, the flutelike call of a meadowlark and the distinct cry of a killdeer can be heard above the din of dozens of different birds. A tiny wren cries from the cattails. Canada geese and sandhill cranes stalk the edge of the marsh. A peregrine falcon flies overhead.

There's life everywhere.

"To most people, the Great Salt Lake is an apparently dead sea," says Harrison. "But actually it is full of incredible amounts of life."

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WHAT: 112 LATE MODEL, LOW-MILEAGE VEHICLES TO INCLUDE: CHEVROLET, FORD AND PLYMOUTH SEDANS; CHEVROLET STATION WAGONS; CHEVROLET, DODGE AND FORD PICKUPS; INTERNATIONAL BUSES; CHEVROLET, DODGE & FORD VANS; INTERNATIONAL CAB & CHASSIS; GMC WRECKER; CHEVROLET AMBULANCE; GMC AND INTERNATIONAL STAKE TRUCKS; INTERNATIONAL & WHITE TRUCK — TRACTORS; GMC & INTERNATIONAL TANKER TRUCKS; CHEVROLET STAKE/PLATFORM TRUCK; CHEVROLET AND INTERNATIONAL STAKE/DUMP TRUCKS; INTERNATIONAL VAN TRUCKS AND CHEVROLET AMBULANCE PANEL VANS; ALSO INCLUDED: ROCKING "O" HORSE TRAILERS, AND UNITS INCLUDE: CHEVROLET, FORD AND DODGE PICKUPS; INTERNATIONAL TANKER TRUCK; CHEVROLET BLAZERS AND CHEVROLET UTILITY TRUCK.

INSPECTION: PROPERTY MAY BE INSPECTED BETWEEN 8:00 A.M. AND 3:30 P.M., MONDAY, TUESDAY AND WEDNESDAY, APRIL 27, 28 AND 29, 1992 AND FROM 7:45 A.M. UNTIL SALE TIME ON THE DAY OF THE SALE AT THE ABOVE LOCATION. FOR SALE INFORMATION CONTACT: DENNIS TUCKER OR JIM YATES; TELEPHONE: (801) 824-5264.

FORMS OF PAYMENT: ACCEPTABLE FORMS OF PAYMENT INCLUDE CASH, CASHIER'S CHECKS, MONEY ORDERS, TRAVELER'S CHECKS, CREDIT UNION CHECKS (NOT FROM A PERSONAL/SHARE DRAFT ACCOUNT) OR GOVERNMENT CHECKS. PERSONAL OR BUSINESS CHECKS ARE ACCEPTABLE ONLY IF ACCOMPANIED BY A BANK LETTER GUARANTEEING PAYMENT. CONTACT GSA FOR DETAILS. IF PAYMENT IS IN EXCESS OF THE PURCHASE PRICE, CHANGE UP TO \$100.00 WILL BE MADE ON SITE. IF CHANGE EXCEEDS \$100.00, SUCH AMOUNT WILL BE PAID BY GOVERNMENT CHECK AND MAILED TO YOUR DESIGNATED ADDRESS OF RECORD (IN APPROXIMATELY 4 TO 6 WEEKS).

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